CLAIMS

What is claimed is:

1. A method for monitoring alignment between a phase modulator and a pulse carver of an optical transmitter, the method comprising:

filtering at least a portion of an optical output signal from the transmitter to generate a filtered optical signal;

measuring power of the filtered optical signal; and

determining misalignment between the phase modulator and the pulse carver based on the measured power of the filtered optical signal.

2. The invention of claim 1, wherein the filtering comprises:

processing the portion of the optical output signal to produce a differentially group delayed (DGD) optical signal; and

processing the DGD optical signal to produce a polarized optical signal.

3. The invention of claim 2, wherein the DGD optical signal is produced by passing the portion of the optical output signal through a birefringent device.

4. The invention of claim 3, wherein the birefringent device is a polarization-maintaining fiber.

5. The invention of claim 3, wherein a slow axis of the birefringent device is oriented substantially 45 degrees from the state of polarization (SOP) of the portion of the optical output signal.

6. The invention of claim 2, wherein the polarized optical signal is generated by passing the DGD optical signal through a polarizer.

7. The invention of claim 6, wherein the polarization axis of the polarizer is oriented substantially orthogonal to the SOP of the DGD optical signal.

8. The invention of claim 2, wherein the polarized optical signal is generated by passing the DGD optical signal through a rotating wave plate followed by a rotating polarizer.

9. The invention of claim 1, wherein the filtering comprises passing the portion of the optical output signal through a periodic filter.

10. The invention of claim 9, wherein the periodic filter is a Mach-Zehnder interferometer.

11. The invention of claim 9, wherein the periodic filter is an etalon filter.

12. The invention of claim 1, further comprising adjusting the phase of at least one of the phase modulator and the pulse carver based on the measured power.

13. The invention of claim 12, wherein the phases of both the phase modulator and the pulse carver are adjusted based on the measured power.

14. The invention of claim 12, wherein the phase is adjusted until the measured power is maximized.

15. The invention of claim 1, wherein the optical output signal is a return-to-zero, phase-modulated optical signal.

16. A module for monitoring alignment between a phase modulator and a pulse carver of an optical transmitter, the module comprising:

a filter adapted to receive at least a portion of an optical output signal from the transmitter and generate a filtered optical signal; and

a power meter connected to measure power of the filtered optical signal and adapted to provide the measured power to a processor capable of determining misalignment between the phase modulator and the pulse carver based on the measured power of the filtered optical signal.

17. The invention of claim 16, wherein the filter comprises:

a birefringent device adapted to process the portion of the optical output signal to produce a differentially group delayed (DGD) optical signal; and

a polarizer adapted to process the DGD optical signal to produce a polarized optical signal.

18. The invention of claim 17, wherein the birefringent device is a polarization-maintaining fiber.

19. The invention of claim 17, wherein a slow axis of the birefringent device is oriented substantially 45 degrees from the state of polarization (SOP) of the portion of the optical output signal.

20. The invention of claim 17, wherein the polarization axis of the polarizer is oriented substantially orthogonal to the SOP of the DGD optical signal.

21. The invention of claim 17, wherein:

the filter further comprises a rotating wave plate positioned between the birefringent device and the polarizer; and

the polarizer is a rotating polarizer.

22. The invention of claim 16, wherein the filter is a periodic filter.

23. The invention of claim 22, wherein the periodic filter is a Mach-Zehnder interferometer.

24. The invention of claim 22, wherein the periodic filter is an etalon filter.

25. The invention of claim 16, further comprising one or more variable delay devices adapted to adjust the phase of at least one of the phase modulator and the pulse carver based on the measured power.

26. The invention of claim 25, wherein the one or more variable delay devices are adapted to adjust the phases of both the phase modulator and the pulse carver based on the measured power.

27. The invention of claim 25, wherein the one or more variable delay devices are adapted to adjust the phase until the measured power is maximized.

28. The invention of claim 16, wherein the optical output signal is a return-to-zero, phase-modulated optical signal.

29. The invention of claim 16, wherein the module comprises the processor.

30. An optical sub-system comprising:

an optical transmitter having a phase modulator and a pulse carver; and

a module adapted to monitor alignment between the phase modulator and the pulse carver, wherein the module comprises:

a filter adapted to receive at least a portion of an optical output signal from the transmitter and generate a filtered optical signal; and

a power meter connected to measure power of the filtered optical signal and adapted to provide the measured power to a processor capable of determining misalignment between the phase modulator and the pulse carver based on the measured power of the filtered optical signal.

31. The invention of claim 30, wherein the sub-system comprises the processor.